DOCUMENT RESUME

ED 202 427 HE 013 950

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TITLE Critique of "Meta-Analysis of Patient Education Research: Implications for Health Care Professionals," by Steven A. Mazzuca.
PUB DATE Apr 81
NOTE 9p.; Paper presented at the Annual Meeting of the American Educational Research Association (Los Angeles, CA April 13-17, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Data Analysis; Educational Assessment; Evaluation Criteria; *Evaluation Methods; Higher Education; Literature Reviews; *Patient Education; Predictor Variables; Program Effectiveness; *Research Methodology; Selection
IDENTIFIERS *Meta Analysis

ABSTRACT

The use of meta-analysis of patient education research as reported by Steven A. Mazzuca in a 1981 conference paper is critiqued. The way that Mazucca's meta-analysis conforms to the criteria for effective conduct of the six methodological tasks of integrative reviews as specified by Jackson (1980) is assessed. The extent to which meta-analysis serves its intended purposes and the outcome variables that are most meaningful in assessing the effects of patient education are examined. It is suggested that Mazucca provides a clear and appropriate rationale for focusing on patient education related to chronic diseases and that he reports his search strategies as well as his criteria for selection of studies. Mazucca provides detailed tables in which he reports for each study: the medical problem, the type of interventions, the type of outcome parameters, and the time-frames. He also performs subanalyses of outcomes for types of intervention and types of outcome parameters. He identifies two genres of eudcational intervention which show a common thread among diverse strategies (didactic and behavioral approaches). Mazucca specifically draws out conclusions for policy and practice with respect to the effectiveness of didactic as compared with behavioral approaches to patient education. Based on a comparison of Mazucca's meta-analysis and one conducted by Posavac, it is suggested that different meta-analyses of similar topical areas will yield different of educational views of what is known in many different studies. In Mazucca's meta-analyses several types of potentially important parameters are not subanalyzed: type of disease, types of compliance, and time-frames. In terms of outcomes, it is suggested that it is important to distinguish compliance and therapeutic progress. (SW)

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ED202427

Critique of "Meta-Analysis of Patient Education Research: Implications for Health Care Professionals" by Steven A. Mazzuca.

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Presented at the Annual Meeting of the American Educational Research Association Los Angeles, April 1981.

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This paper is an excellent example of the increasing number of studies designed to infer generalizations about substantive issues from a set of studies bearing on those issues--studies which may be different in design, context, classes of subjects and many other factors. Glass, in his presidential address to the 1976 American Educational Research Association Annual Meeting, and elsewhere, has argued eloquently for the value of such integrative reviews. He argues, "The literature on dozens of topics in education is growing at an astounding rate . . . . the findings vary in confusing irregularity across contexts, classes of subjects, and countless other factors . . . . Before what has been found can be used, before it can persuade skeptics, influence policy, affect practice, it must be known . . . . We face an abundance of information. Our problem is to find the knowledge in the information. We need methods for the orderly summarization of studies so that knowledge can be extracted from the myriad of individual researches" (Glass, 1976, p. 3). Glass and his colleagues have developed one, now rather widely-used set of procedures for estimating the over-all effect-size of experimental treatments reported in a set of studies, which they label "meta-analysis". This is the set of procedures Mazucca uses in his integrative review of the literature that bears upon the effectiveness of patient education.

Mazucca's paper reports a responsible, carefully-wrought meta-analysis of a fundamentally important problem area, which conforms, in most respects, to the criteria for effective conduct of the six methodological tasks of integrative

reviews which Jackson outlines in his recent article, "Methods for Integration Reviews" (Jackson, 1980). I will first characterize the ways in which Mazucca's study is exemplary, particularly with respect to Jackson's criteria. Then, I will use Mazucca's paper as a vehicle to explore a broader issue in meta-analysis--namely: To what extent does meta-analysis serve its intended purposes?--and a broader issue in patient education--What outcome variables are most meaningful in assessing the effects of patient education?

Jackson's first methodological task relates to the importance and appropriateness of questions addressed in meta-analyses. Mazucca gives a clear--and I believe appropriate rationale--for focusing on patient education related to chronic diseases. Increasingly, diseases of pressing concern are chronic ones whose control requires patient cooperation in treatment; moreover, risk factor identification for such diseases and recommendation of preventive measures is rapidly becoming a prevalent concern. Consequently, most hospitals and clinics take patient education seriously as a means of addressing these problems. Concurrently, there is a need to assess the effectiveness of patient education in general, and various approaches to patient-education, in order to respond to policy issues--such as whether patient-education shall be reimbursed--as well as practice questions related to the effectiveness of various approaches to patient education.

Jackson's second methodological criterion relates to sampling--namely the adequacy and the detailed reporting of both search strategies and criteria for selection of studies to be sampled. Mazucca reports his search strategies as well as his criteria for selection of studies in exemplary detail. Was the study a quasi- or true experiment? Did subjects have chronic medical problems? Was the independent variable a defined educational protocol? Did dependent variables include either compliance, progress toward a physiological goal, or long-term health outcomes?

Jackson's third methodological criterion relates to the adequacy with which the characteristics and findings of primary studies are represented. Mazucca provides detailed tables in which he reports for each study: the medical problem, the type of interventions, the type of outcome parameters, and the time-frames. Moreover, he performs sub-analyses of outcomes for types of intervention and types of outcome parameters, a sort of analysis that corresponds to Jackson's fourth methodological task: searching for correlates of varying results of studies. I think Mazucca offers a useful categorization of patient education interventions by identifying two genres of educational intervention which effectively shows a common thread among diverse specific strategies. The critical attribute of "didactic" approaches is a standard presentation to all patients; the critical attribute of "behavioral" approaches is that treatment principles and instructional examples are drawn from the patients' unique circumstances. In the area of these two methodological tasks: representing the characteristics of primary studies and analyzing the relationship of these characteristics to outcomes, I would suggest that certain other characteristics could be represented, such as patient sex, patient age, and in-patient or out-patient status, and also types of compliance measures. Moreover, separate analyses in relation to these variables, as well as to type of chronic disease, and time-frame of outcome, might be done since they could be important variables in relation to outcomes.

Jackson's fifth and sixth methodological tasks relate to: interpreting results with respect to theory, policy or practice and reporting the results. Mazucca does specifically draw out conclusions for policy and practice with respect to the effectiveness of what he labeled "didactic" as compared with "behavioral" approaches to patient education. Also, he does specifically report literature search and sampling procedures, as well as certain study characteristics so that the reader does have access to some important aspects of the

primary data.

Now, I will use Mazucca's excellent study as a vehicle to address the question: To what extent do well-done, responsible meta-analyses, such as this one, serve the original purpose cited by Glass, 'to find out what is known in the plethora of studies'? In fact, a chance occurrence, the publication by Posavac of another meta-analysis of patient-education programs, published this year, in March 1980, in Evaluation and the Health Professions, demonstrates powerfully and predictably that meta-analysis is not a panacea (Posavac, 1980). The studies by Mazucca and Posavac address purportedly similar issues, the effectiveness of patient-education. Mazucca sampled articles appearing between 1970 and 1980; and Posavac sampled articles appearing between 1973 and 1978. A selection criterion used by both is that the studies sampled have experimental or quasi-experimental designs. Despite these similarities, the intersect of articles reviewed in common, of the 23 articles reviewed by Posavac and the 25 reviewed by Mazucca, is five. Moreover, Posavac reported a substantially larger overall effect size for patient-education than Mazucca. How can one account for the small intersect of studies and the differing conclusions? The reason, at least in part, I believe, is that Mazucca and Posavac used some different criteria for selection of sampled studies. Posavac included studies which assessed outcome variables of knowledge, mood, and anxiety, as well as compliance and physiological change. This point is not to fault either study, but to suggest that different reviewers will have legitimately different criteria for selection of studies, different categories for representing the findings of those studies, and different views of appropriate sub-analyses. Consequently, different meta-analyses of similar topical areas will yield different views of what is known in the plethora of different studies. Thus, the same care must be taken in interpreting the results of meta-analyses as must be taken in interpreting the results of the original studies they are designed to integrate;

and one can begin to see the spector of meta-meta-analysis.

There is yet another fundamental problem in conducting and reporting meta-analyses--namely: For whom and for what purposes are the conclusions useful? Typically, meta-analyses, such as Mazucca's, yield overall effect-sizes for the main effect of concern, as well as sub-analyses for important treatment variables, in this case "didactic" and "behavioral" interventions and important outcome variables, in this case compliance, changes in physiological parameters, and long-term outcome measures. Yet, such general results may mask the effect of categories of parameters that are important with respect to varying outcomes and important for guiding practice. In this study, for example, several types of potentially important parameters are not subject to sub-analyses: types of disease, types of compliance, time-frames, and parameters of physiological change. In fact, from scrutiny of Mazucca's tables, one sees large differences in effect-size among studies, which may relate to the type of disease and its perceived immediate threat to the patient. For example, there is a relatively large effect size when the outcome variable is compliance with medication regimens for renal dialysis, but a relatively small effect-size in the case of "preventive actions" for asthma. Variations in outcomes may also relate to types of compliance. Scrutiny of Mazucca's tables shows a relatively small effect-size related to compliance with diet regimens in the treatment of hypertension as compared with a relatively large effect-size of compliance with non-smoking in the follow-up management of heart attack patients. To his credit, Mazucca presents much of this type of specific information in his tables so that interested readers can assess the data for their areas of special interest. In general, however, it is this type of specific data--related to specific educational interventions, for specific diseases, for specific types of compliance or outcomes, and for perhaps specific characteristics of patients, such as age, sex, and in-patient/out-patient status, which is of critical importance

in guiding development of patient education programs. So meta-analyses are not a panacea, and must be read with care in terms of particular purposes.

Mazucca's paper can also be used as a vehicle to address an important issue in assessing the effects of patient education--namely: What outcome variables are most suitable and meaningful for assessing the effects of patient education? Mazucca includes studies that assess compliance, physiological changes and long-term health outcomes. Posavac includes variables also related to knowledge, anxiety, mood, as well as compliance, physical functioning, and long-term health outcomes, such as morbidity. I contend that it is quite appropriate to use knowledge, attitudes, and mood, as partial indicators of the effect of patient education programs, since these factors most likely have a close relationship with compliance. Conversely, I question using the outcome variables of physiologic change and long-term health care outcomes to assess the effects of patient education. These are, of course, the ultimate desired outcomes of patient education. However, note that given the combination of compliance to a treatment regimen and lack of desired physiological changes or long-term outcomes, the real issue is the viability, suitability, refinement, and soundness of the recommended regimen, not the effectiveness of patient education in securing compliance. Clearly, patient education, compliance, and therapeutic progress are intricately linked, but it is important, I think, to distinguish compliance and therapeutic progress as separate issues--the first, a meaningful assessment of patient education and the second, an assessment of the soundness of advice and recommendations, given compliance. Of course, Mazucca does separate sub-analyses of these genres of outcomes and provides readers with data to make their own judgments.

In summary, Mazucca has done a responsible and provocative meta-analysis, which therefore permits us to raise questions about the extent to which such analyses serve their intended purpose--"to find the knowledge in the informa-

tion"--as well as to raise questions about the appropriateness of various types of outcome variables in assessing the effectiveness of patient education.

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